CLAIMS

1. Method for drawing an optical preform of large diameter into an optical fiber or into a preform of smaller diameter, said method comprising the steps of:
   - introducing said optical preform into a drawing furnace through a top chimney connected to said furnace;
   - mechanically sealing the upper portion of said top chimney;
   - heating the bottom end of said preform into the furnace to its softening temperature;
   - introducing a flow of conditioning gas into said top chimney;

   wherein the step of introducing the flow of conditioning gas comprises imparting a downward angled direction to said flow of conditioning gas entering said top chimney.

2. Method according to claim 1 wherein said downward angled direction forms an angle of less than about 45° with respect to the longitudinal axis of the drawing furnace.

3. Method according to claim 1 wherein said downward angled direction forms an angle of from about 40° to about 20° with respect to the longitudinal axis of the drawing furnace.

4. Method according to claim 1 wherein said furnace further comprises a bottom chimney connected to the bottom of said furnace, said method further comprising the step of allowing said gas to flow from said furnace body to said bottom chimney and then outside from said furnace, the speed of the conditioning gas in at least a lower portion of said bottom chimney having a gradient substantially constant or slightly increasing.

5. Method according to claim 4 wherein the increment of the velocity of the gas within said lower portion is from about 1/10 to about 1/100 per mm of height of said lower portion with respect to the velocity of the gas entering into said lower portion.

6. Drawing furnace for drawing an optical preform into an optical fiber or into another preform having a smaller diameter, said furnace comprising:

- a furnace body having an upper end and a lower end and comprising at least a susceptor, an induction coil and an insulating material disposed between said susceptor and said induction coil; and

- a top chimney connected to the upper end of said furnace body, said top chimney comprising a mechanical seal for avoiding inlet of ambient air into the furnace;

wherein said top chimney comprises on its upper portion a distributor body through which conditioning gas is uniformly introduced into the top chimney and forcedly directed in a downward direction towards said furnace body.

7. Drawing furnace according to claim 6, wherein said downward direction forms an angle of less than about 45° with respect to the longitudinal axis of the drawing furnace.

8. Drawing furnace according to claim 6, wherein said downward direction forms an angle of from about 40° to about 20° with respect to the longitudinal axis of the drawing furnace.

9. Drawing furnace according to claim 6, wherein said distributor body comprises:

- an annular distribution chamber;

- a downward-angled annular outlet connected to said annular chamber and in fluid communication with the top chimney interior;

said annular outlet defining a downward-angled flow path from the top chimney interior towards the heating zone of the furnace.

10. Drawing furnace according to claim 9 further comprising a feed duct leading from a source of conditioning gas to said annular chamber, said duct being tangentially disposed with respect to said chamber.

11. Drawing furnace according to claim 9 wherein a plurality of fins is radial disposed within the annular outlet.

12. Drawing furnace according to claim 9 wherein a porous filter is disposed inside the distributor body and interposed between the annular distribution chamber and the downward-angled annular outlet.

13. Drawing furnace according claim 9 further including a support collar apt to receive and firmly hold one end of the optical preform or of a mother rod connected to said preform contained into the furnace.

14. Drawing furnace according to claim 13 wherein said support collar is free to slide atop the distributor body.

15. Drawing furnace according to claim 13 wherein a substantially ring-shaped resilient seal is provided on the interior wall of the support collar, said seal preventing ambient atmosphere from entering into the furnace while allowing the preform or the mother rod to be removed from the interior of the furnace through said support collar without sticking to said seal.

16. Drawing furnace according to claim 15, wherein said seal defines a seal height and comprises a seal seat having a seat height, and two opposing seal walls, each of which extends from the seal seat, the ratio of the seat height to the seal height being less than about 2, preferably from about 2 to about 1.4.

17. Drawing furnace according to claim 7 further comprising a bottom chimney connected to the lower end of said furnace, said bottom chimney comprising at least a lower portion with a decreasing cross-sectional area from the top to the bottom of the bottom chimney in a plane perpendicular to the longitudinal axis.

18. Drawing furnace according to claim 17 wherein said bottom chimney comprises at least a lower portion tapered in the form of a substantially frusto-conical shaped nozzle, the walls of said frusto-conical nozzle being angled of from about 12° to about 16° with respect to the longitudinal axis of the furnace.

19. Drawing furnace according to claim 18, wherein said frusto-conical shaped nozzle has a height of from about 200 mm to about 300 mm.

20. Drawing furnace according to claim 18, wherein said frusto-conical shaped nozzle is provided at its bottom end with a shutter portion connected to the bottom of said nozzle, defining an exit aperture that is adjustable to control the size of the exit aperture.

21. Drawing furnace according to claim 18 wherein the bottom chimney further comprises an inner wall and an outer wall, which together define a cooling space, through which cooling fluid is circulated to cool the interior of the bottom chimney surrounded by said cooling space.

22. Drawing furnace according to claim 1, wherein said insulating material is a rigid graphite material shaped in the form of a substantially cylindrical hollow body, capable of withstanding its own weight without collapsing onto the susceptor.

23. Drawing furnace according to claim 22, wherein said rigid graphite material is comprised of graphite fibers oriented parallel to the axis of the cylindrical body.

24. Drawing furnace according to claim 22 wherein said cylindrical body is made from a single sheet of said rigid graphite material, two opposite ends of which are curved and held in contact to each other to form the cylinder.

25. Drawing furnace according to claim 24 wherein the thickness of said single sheet of rigid graphite material is from about 45 to about 60 mm.

26. Drawing furnace according to any of the preceding claims wherein the susceptor has an inner diameter of more than 100 mm.